

Motor and Generator Training

Course Directory
External course offering



Motor and Generator Training



ABB offer product training courses for motors and generators. We offer training for design and theory behind the motors and generators, installation, commissioning, condition monitoring, preventing maintenance, overhaul and repair.

Some of the courses are specified on products manufactured in certain location. You also can ask tailor made courses specific on your needs.

The standard courses are offered at ABB premises or at the end user site according to your needs.

As one special area, we offer training intended for hazardous areas. The training includes ATEX Directives and standards. The course G932 is required for workshop authorization. We also offer refreshment training web courses.

ABB employs life a cycle management strategy for its products and services. Our courses give a good base for implementing this strategy for your motors and generators.

Course flow

Technical training for motors and generators

G930 3 days
Motors and generators workshop service training

G931 4 days
Motor and generator training for service partners

G911 4 days
Electrical machines operation and maintenance

G901 4,5 days
Electrical machines theory, operation and maintenance

Products manufactured in Västerås, Sweden

G920 3 days
Electrical machines theory, operation and maintenance

Products manufactured in Helsinki, Finland

Training for motors and generators for hazardous areas

G932 2 days
Service training for motors and generators for hazardous areas

G933e ~1,5 days
Service refreshment training for motors and generators for hazardous areas – web course

These courses are targeted for the workshops.

Advanced ATEX is a special training course for our customers operating with hazardous areas.

G964e ~ 2 days
Advanced ATEX training- web course

Course information

Information (descriptions, schedules, enrollment procedures etc.) about all courses can be found at our web sites:

<http://www.abb.com/motors&drives>

Information about other courses can also be read at the ABB Universitys´ web sites

<http://www.abb.com/abbuniversity>

Contact

For futher information on courses, please contact us:

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Course registration and policies

Course registration

For request a course or enrolling to a web course, please send an email to the address below.

birgitta.nyholm@fi.abb.com

elisa.ylikoski@fi.abb.com

kaija.toivonen@fi.abb.com

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Payments

Course prices cover the course on ABB facilities, course material, lunches and refreshments during the course. Accommodation and traveling costs are covered by the participant. Ask special offer for training at other locations.

Course:

	<u>Price</u>
G930 Motors and Generators Workshop Service Training	1 200 €/person
G931 Motor and Generator Training for Service Partners	1 000 €/person
G911 Electrical Machines Operation and Maintenance	1 850 €/person
G901 Electrical Machines Theory Operation and Maintenance (Products Manufactured in Västerås, Sweden)	1 400 €/person
G920 Electrical Machines Theory, Operation and Maintenance (Product manufactured in Helsinki, Finland)	1 200 €/person
G932 Service Training for Motors and Gen for Hazardous Areas	990 €/person
G933e Service Refreshment Training for Motors and Generators for Hazardous Areas – web course	150 €/person
G964e Advanced ATEX training – web course	1 000 €/person

Cancellation

A course may be cancelled in case a certain minimum number of participants is not received. There is also a maximum number of students. For further information, please see the course descriptions.

In case of cancellation please advise us the soonest. This will allow another applicant to attend the course. If your cancellation is received later than **one week before the start of the course**, a cancellation fee (half of the course price) will be charged. Your place on a course can always be transferred to another person from your company or department.

Confirmation & Reservations

In case there are no vacant places on the applied course, you will be informed soonest.

Confirmation of acceptance with information of the course location and program will be sent latest two weeks before the course. We reserve the right to change course schedules, programs, contents and prices.

Accommodation & Traveling

Participants take care of the hotel reservations and traveling. In case you need help with hotel reservations please contact us.

Motors and Generators Workshop Service Training

Course Duration

The duration is three days.

Course Type

This is an instructor led course.

Course Goal

After the course the service personnel has a general understanding of the customers' after sales needs and is able to give the required support for installing, operating, maintaining and repairing motors and generators.

Student Profile

This training is targeted to ABB employees in service centres and ABB service agreement partners and ABB employees in project implementation

Prerequisites and Recommendations

General knowledge of different kinds of rotating electrical machines design and operation principles and experience of general maintenance and service work methods and tooling.

Course Objectives

After the course the participants will be able to

- implement installation and commissioning in cooperation with factories
- carry out maintenance procedures in cooperation with factories
- work within the ABB after sales network and understand the roles of different factories.
- conduct troubleshooting and report completed actions.

Main Topics

- General Information
- Design and theory of AC machines
- Inspection and storage
- Installation and commissioning
- Maintenance and repair
- Condition monitoring, diagnostics and testing
- Corrective actions and trouble shooting
- Spare parts and after sales services
- Warranty handling
- Reporting

Motor and Generator Training for Service Partners

Course Duration

The duration of the course is four days; 2-days in Helsinki and 2-days in Västerås.

Course Type

This is an instructor led course with extensive practical training and visits in the production lines. The language of the course is English.

Course Goal

The goal of the course is to give participants a good understanding of ABB's large HV and LV motors and generators, their structure and production. The motor theory combined with practicing in the motor factory helps the participants to understand the structure of the motors, the purpose of testing, and the production process.

Student Profile

This training is targeted at ABB service partners, ABB employees in service centers and in project implementation.

Prerequisites and Recommendations

Experience with large HV and LV motors and generators.

Course Fee

The course fee is 1000€ which covers lunches, refreshments and a ship transportation Helsinki-Stockholm (accommodation in single person cabins, a dinner and breakfast on board).

Course Objectives

Upon completion of this course the participant will have

- a good understanding of ABB portfolio of large HV and LV motors and gen. and DC motors
- a basic knowledge regarding design of the ABB HV and LV motors and gen. and DC motors
- contact channels for each type of motor

Main Topics

- Product range, Obsolete products
- Applications
- Basic mechanical design
- Electrical design, Winding and insulation systems
- Control equipment for synchronous motors
- Testing of motors and generators
- Complaints and warranty handling
- Technical support
- ABB After Sales products
- Manufacturing of new motors and generators
- Repair and maintenance of Ex motors

Electrical Machines Operation and Maintenance

Course Duration

The duration is 4 days.

Course Type

This is an instructor led course. The course includes lectures, demonstrations, hands-on with state-of-the-art ABB equipment (about 50% of the time) practical exercises, discussions, factory tours.

Course Goal

After the course the participants have a comprehensive knowledge about the design and operational behavior of electrical AC and DC machines . Also maintenance and repair procedures are introduced. This all together gives a good understanding for all level of personnel involved in planing, operating or maintenance of electrical machines.

Student Profile

Design and planning personnel, engineering and application personnel, maintenance and operating personnel and consultants from the Electricity Supply Industry.
Business managers, sales personnel and technical personnel from ABB companies which like to have more knowledge about our products and the operational behavior.

Prerequisites and Recommendations

Technically trained persons.

Course Objectives

After the course the participants will be able to

- Have common understanding of electrical machines
- make a competent assessment of the faults most frequently arising on electrical machines and to initiate the necessary corrective measures
- to perform a simple maintenance independently

Main Topics

Basics

- Brief introduction into the theory of electrical machines.
- Electrical Machines Maintenance
- Fundamentals and terminology of maintenance
- Winding structure, insulation system
- Test methods and determination of state particularly with regard to bearing condition, vibration
- Simple check of the windings, diagnosis of sliprings and commutator, faults on brushes and brush gear and kind of methods for eliminating the most frequently occurring faults.

Electrical Machines Theory, Operation and Maintenance (Products manufactured in Västerås, Sweden)

Course Duration

The duration is 4,5 days.

Course Type

This is an instructor led course at the Machines factory, Västerås Sweden.

Course Goal

The concept of large motors and generators are introduced from an electrical as well as a mechanical aspect, covering both synchronous and induction machines. The course starts at a basic level but also covers more in-depth information. Accessories, dynamic analysis, starting methods and control equipment are also covered. Theory is combined with practice in the workshop. Focus towards the products manufactured in the ABB Machines factory in Västerås, Sweden.

Student Profile

For ABB employees as well as customers or others with an interest in large electrical machines.

Prerequisites and Recommendations

Students should have a basic electrical and mechanical knowledge

Course Objectives

After the course the participants will be able to...

- explain the basics of large rotating electrical machines, electrically as well as mechanically
- explain after sales service and maintenance issues with regards to these machines
- describe how the machines is functioning in relation to control equipment
- present some motor and generator applications
- explain what are the main features of the machines from ABB Machines in Västerås

Main Topics

- Mechanical and electrical design
- Comparison of induction and synchronous machines
- Theory of Induction & Synchronous machines
- Hazardous Area Design
- Motor and Generator control panels
- Motor starting
- After Sales Support

Electrical Machines Theory, Operation and Maintenance (Products manufactured in Helsinki, Finland)

Duration

The duration is 3 days

Course Type

This is an instructor led course at the Machines factory, Helsinki, Finland

Course Goal

After the training the service and/or operation personnel has understanding of AC machines' operation and service needs and is able to give them the product specific pro-active maintenance and service knowledge.

Student Profile

End-user or OEM operational/service personnel

Prerequisites and Recommendations

- good knowledge of the customer/OEM specific application needs
- general knowledge of the rotating electrical machines construction and operation
- experience of general maintenance and service work methods and tooling

Course Objectives

After the course the participants will be able:

- understand the functions of machines' various components
- make the settings of excitation and protective devices
- operate the machine in a proper way
- undertake the operational and scheduled maintenance
- work within the ABB after sales network and understand the roles of different factories

Main Topics

- Machine design and main components
- Hazardous Area Design (optional)
- Excitation equipment
- Control panel
- Protection devices
- Operation
- Operational maintenance
- Scheduled maintenance
- After sales services and contacts with BU's LV Motors, Machines
- Life-cycle management and service products

Service Training for Motors and Generators for Hazardous Areas

Duration

The duration is two days.

Course Type

This is an instructor led course with some hands-on exercises. The training will be based on IEC 60079-17 and IEC 60079-19 standards. In the end of the training a test will be held to ensure that participants have gained a sufficient knowledge.

Course Goal

The goal of the course is to **certify personnel for maintenance** of ABB's AC low and high voltage induction and synchronous motors and generators on the following protection types: flameproof, increased safety, pressurized, non sparking and dust ignition proof.

Student Profile

This training is targeted to service and maintenance technicians.

Prerequisites and Recommendations

The student should have basic knowledge and experience in service of standard motors prior attending this course. Provide IEC/EN 60079-14, IEC/EN 60079-17, IEC/EN 60079-19 and EN 50281-1-2 in participants language (if available).

Course Objectives

Upon completion of this course, students will be able to

- describe the relevant standards and main principles of protection types
- describe the hazardous area motor and auxiliary constructions and motor protection
- carry out trouble shooting, adjustments and settings of hazardous area motors
- describe which the permitted maintenance and repair actions are
- carry out, supervise or advice maintenance and repair of hazardous area motors
- test the functionality of the motor after undertaken actions

Main Topics

- Application environments
- Directives and standards (EN and IEC-standards)
- Hazardous area motor product range and design
- Service requirements for hazardous area motors
- Testing, mounting

Service Refreshment Training for Motors and Generators for Hazardous Areas

Duration

The duration is dependent upon the participant, this course is equivalent with 1,5 day classroom training.

Course Type

This is a web-based training course. The motor experts are assisting the students in the net. The training will be based on IEC 60079-17 and IEC 60079-19 standards. In the end of the training a test will be held to ensure that participants have gained a sufficient knowledge. Available languages are English, Italian, Spanish, French and German.

Course Goal

The goal of the course is to refresh the knowledge of the certified personnel for maintenance of ABB's AC low and high voltage induction and synchronous motors and generators on the following protection types: flameproof, increased safety, pressurized, non sparking and dust ignition proof.

Student Profile

This training is targeted to service and maintenance technicians.

Prerequisites and Recommendations

G932 Service Training for motors and generators for Hazardous areas. The standard recommends to take this training not later than every three years.

Course Objectives

Upon completion of this course, students will be able to

- describe the relevant standards and main principles of protection types
- describe the hazardous area motor and auxiliary constructions and motor protection
- carry out trouble shooting, adjustments and settings of hazardous area motors
- describe which the permitted maintenance and repair actions are
- carry out, supervise or advice maintenance and repair of hazardous area motors
- test the functionality of the motor after undertaken actions

Main Topics

- Application environments, directives and standards (EN and IEC-standards)
- Hazardous area motor product range and design
- Service requirements for hazardous area motors, testing, mounting

Minimum System Requirements

- 32 MB of RAM (64MB is recommended), 28.8 modem or LAN connection to the course server, internet connection (optional), printer (optional)

Advanced ATEX Training

Course Duration

The duration is dependent upon the participant. This course is equivalent with two day classroom training.

Course Type

This is a web-based training course. The motor experts are guiding the students in the net. The language of the course is English.

Course Goal

The course will introduce the basic principles of the ATEX directives, references to corresponding standards and give several practical advises.

Student Profile

This training is targeted to personnel in ABB as well as the customers in co-operation with ABB that are involved in Ex business.

Prerequisites and Recommendations

This program is addressed to student who have already a good understanding of the basic rules of the Ex market and have the practice of the previously mentioned standards.

Course Objectives

Upon completion of this course the participants will be able to

- describe the basic principles of the ATEX directives
- define references to corresponding standards
- select the equipment according the advise of manufacturer, especially for VSD applications
- describe the connection with the non-electrical equipment
- explain the new rules do define relationships with third parties

Main Topics

- Worker Protection Directive (ATEX 137)
- Third parties new responsibilities
- Installation, Maintenance, Repair under ATEX Directives
- Products Directive (ATEX 95)
- Motors with converters for variable speed drives
- Mechanical (Non-electrical) equipment

Minimum System Requirements

32 MB of RAM (64MB is recommended), 28.8 modem or LAN connection to the course server, internet connection (optional), printer (optional), Lotus Notes 4.6



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